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Supplemental Material

Cross-Sectional Associations of Serum Perfluoroalkyl Acids and Thyroid Hormones in U.S. Adults: Variation According to TPOAb and Iodine Status (NHANES 2007-2008)

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Figure S1. Directed Acyclic Graph (DAG) showing the causal relationships assumed among variables. All variables except BMI were included in the final models.

Table S1. Spearman correlations (ρ) among PFASs and thyroid hormones in our study sample (n=1525 US adults, NHANES 2007-2008)

Figure S2. Percent differences in serum thyroid hormone levels for an interquartile ratio increase in serum PFAS concentrations in US adults (NHANES 2007-2008). Results are identical to those shown in Figure 3, but are re-grouped to allow for comparisons in the associations across thyroid stressors for each chemical. Results are stratified by TPOAb status (Normal = <9 , High = ≥ 9 IU/mL serum) and iodine status (Normal = ≥ 100 , Low = <100 $\mu\text{g/L}$ urine). Results are shown for 4 groups: T0I0: Normal TPOAb, normal iodine (n=1012); T0I1: Low Iodine only (n=400); T1I0: High TPOAb only (n=87); T1I1: High TPOAb and Low Iodine (n=26). Error bars represent the 95% confidence intervals. Models are adjusted for age, race, log serum cotinine, sex, parity, pregnancy and menopause status. Interquartile ratios: 3.2 (PFHxS), 2.1 (PFNA), 2.1 (PFOA), 2.5

(PFOS). PFASs and THs were Ln-transformed in models. % differences = $[(\text{IQ Ratio}^{\text{Beta}}) - 1] * 100$

Table S2. Sex-specific % differences (and 95% Confidence Intervals) in serum thyroid hormones for an interquartile range increase in serum PFAS levels in US adults. Results are shown for 4 subgroups stratified by Iodine and Thyroid Peroxidase Antibody (TPOAb) status. Significant ($p < 0.05$) associations are shown in bold text. Significantly different associations in men and women (p interaction < 0.1 for PFAS*sex) are marked with *

Figure S3. Sex-specific % differences in serum thyroid hormone levels for an interquartile ratio increase in Ln serum PFAS concentrations in US adults (NHANES 2007-2008). Results are stratified by Thyroid Peroxidase Antibody (TPOAb) status (Normal: < 9 , High: ≥ 9 IU/mL serum) and iodine status (Normal ≥ 100 , Low: < 100 $\mu\text{g/L}$ urine). Results are shown for 4 groups: T0I0: Normal TPOAb, normal iodine ($n=586$ men / 426 women); T0I1: Low Iodine only ($n=188$ men / 212 women); T1I0: High TPOAb only ($n=32$ men / 55 women); T1I1: High TPOAb and Low Iodine ($n=7$ men / 19 women). Error bars represent the 95% confidence intervals. Models are adjusted for age, race, log serum cotinine, sex, parity, pregnancy and menopause status. Interquartile ratios: 3.2 (PFHxS), 2.1 (PFNA), 2.1 (PFOA), 2.5 (PFOS). PFASs and THs were Ln-transformed in models. % differences = $[(\text{IQ Ratio}^{\text{Beta}}) - 1] * 100$. *Significantly different associations in men and women (p interaction < 0.1 for PFAS*sex)

Table S3. Comparison of T1I1 results with all participants ($n=26$) and with one influential T1I1 participant excluded ($n=25$). Percent differences and 95% Confidence Intervals (95% CI) in serum thyroid hormone levels for each interquartile ratio (IQ Ratio) increase in serum PFAS concentrations in US adults with both high TPOAb and low iodine